

REMARKS

Claim Amendments

As indicated above, claims 1, 6, 8, 14, 17, 22, 28, 29, 31-33 and 42 have been amended.

Claims 1 and 17 have been amended to clarify an antecedent basis issue in these claims.

Claims 6 and 8 have been amended to correct a clerical issue.

Claims 14 and 29 have been amended to more clearly place the limitation of this claim in a process form.

Claim 22 has been amended to incorporate a limitation such as set out in original claim 5.

Claim 28 has been amended to clarify an antecedent basis issue and to correct a clerical error.

Claim 31 has been amended to clarify an antecedent basis issue in the claim.

Claims 32 and 33 have been amended to depend from claims 14 and 29, respectively, so as to clarify that the self-dispersing pigments of those claims have an acid value of less than 3 $\mu\text{moles./M}^2$.

Finally, claim 42 has been amended to correct a clerical error.

These amendments, consequently, add no "new matter" to the present application, and the Applicants request that such amendments be entered into the present record for further examination.

Oath/Declaration

The Examiner has objected to the Declaration filed in this application as allegedly not identifying the mailing address of each inventor. As pointed out by the Examiner, this information need not specifically be contained in the Declaration itself, but may be provided in an Application Data Sheet (ADS). 37 C.F.R. §§1.63(c) and 1.76.

The Applicants would note that an ADS was submitted at the time of filing this application, and attach a copy of such ADS hereto as ANNEX A. The Applicants also attach, as ANNEX B, a copy of the return receipt postcard submitted with the filing

of this application indicating receipt by the Patent Office of the ADS so submitted.

The Applicants, therefore, submit that the Declaration in this application is not defective, and respectfully request withdrawal of the objection thereto.

Claim Rejections

Initially, the Applicants gratefully acknowledge the Examiner's indication of the allowability of the subject matter of claims 8, 10, 13, 14, 16, 18, 19, 22, 23, 25, 28-31, 34, 41 and 42, but believe that they are entitled to the full scope of the invention claimed in claims 1-42 for the reasons stated below.

(1) Obviousness in View of Jager et al

Claims 1, 4, 11-12, 17, 20, 21, 23, 26, 27, 32 and 33 stand rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over the disclosure of Jager et al (US3717494). The Applicants respectfully traverse this rejection.

First, the Applicants would note that claims 32 and 33 now contain the limitations of claims 14 and 29, respectively, which are not part of this rejection. The Applicants, therefore, respectfully request withdrawal of this rejection as applied to claims 32 and 33.

The two remaining independent claims included within this rejection are claims 1 and 17. Both of these claims are directed to a process for making a self-dispersing pigment by oxidizing a pigment with **ozone** in an **aqueous** "environment" (claim 1) or "medium" (claim 17). Claim 1 further requires that the pigment is subject to at least one dispersive mixing operation, while claim 17 separately requires maintenance of the pH within a certain level.

Jager et al, on the other hand, teaches a process for oxidizing carbon black by treating the carbon black, while still in the gas phase, with an aqueous solution of hydrogen peroxide (e.g., by spraying) at a temperature of from 150°C to 600°C.

As is recognized by the Examiner, Jager et al fails to exemplify the use of ozone in the process. In fact, the only

mention of ozone in the disclosure of Jager et al is reference to well-known gas-phase ozone-enriched-air oxidation processes. This process is considered by Jager et al to be disadvantageous (see the paragraph bridging columns 1 and 2 of Jager et al).

It is the position of the Examiner that one of ordinary skill in the art would use ozone in the process of Jager et al, but this is simply an unsupported assertion and, in fact, goes against the view expressed in Jager et al that ozone processes are disadvantageous.

Even if one would consider using ozone in the process of Jager et al, there is no disclosure of oxidizing in an aqueous (**liquid**) environment/medium as required by the present claims. In Jager et al, the carbon black is treated by spraying an aqueous solution into a reactor at a temperature of at least 150°C (in the examples at least 300°C). At this temperature, the carbon black in Jager et al would not be treated in a liquid aqueous phase as required by the present claims. Based upon the disclosure of Jager et al, there simply is no disclosure that would suggest to one of ordinary skill in the art to run the reaction in liquid phase, much less use ozone as an oxidizing agent in the liquid phase.

As indicated above, independent claim 1 further requires "at least one dispersive mixing operation". Dispersive mixing, described in the specification at lines 17-29 on page 9, involves much higher shear rate than normal mixing and stirring operations. The advantages of dispersive mixing include lower particle size and a narrower size distribution (last paragraph on page 18 of the specification). Nowhere in Jager et al is there any teaching or a suggestion of dispersive mixing. Thus, with regard to claim 1 (and the other claims dependent thereon), Jager et al simply fails to disclose or even remotely suggest oxidation of a pigment with ozone in an aqueous environment under dispersive mixing conditions.

As also indicated above, claims 17 further requires that the aqueous medium is maintained at a pH of 6 to 8. Without deliberate measures to control pH, the oxidation of pigment with ozone will cause a drop in pH to well below 6. The Applicants note in the specification (at page 6, lines 3-7) that, as pH decreases, the viscosity of the mixture increases.

Maintaining lower viscosity through pH control is advantageous for greater process efficiency, and Jager et al makes no mentioned whatsoever of pH control. Thus, with regard to claim 17 (and the other claims dependent thereon), Jager et al again simply fails to disclose or even remotely suggest oxidation of a pigment with ozone in an aqueous medium while maintaining a pH of 6 to 8.

An obviousness rejection of the present claims based solely on Jager et al, therefore, cannot be factually or legally supported, and the Applicants respectfully request that such rejection be withdrawn.

(2) Obviousness in View of Karl

Claims 1-3, 5-7, 9, 15 and 32 stand rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over the disclosure of Karl (US6471763). The Applicants respectfully traverse this rejection.

The Applicants would note that claim 32 now contains the limitations of claims 14, which is not part of this rejection. The Applicants, therefore, respectfully request withdrawal of this rejection as applied to claim 32.

As for the remainder of the relevant claims, Karl describes a process for oxidatively treating carbon black with ozone, but in the context of a fluid-bed reaction (also known as fluidized bed reaction). The reactant is a gas (treatment gas - ozone enriched air) and the "fluid" is the bed carbon black pigment particles mobilized by the treatment gas as it circulates through the reactor.

The process as set forth in claim 1, on the contrary, is directed to oxidation in an "aqueous environment" (liquid medium), and no such aqueous environment or liquid medium is mentioned or suggested in Karl.

As discussed above, claim 1 further require "at least one dispersive mixing operation". Nowhere in Karl is there any teaching or a suggestion of dispersive mixing. Thus, with regard to claim 1 (and the other claims dependent thereon), Karl simply fails to disclose or even remotely suggest oxidation of a pigment with ozone in an aqueous environment under dispersive mixing conditions.

(3) Obviousness over Karl in View of Suzuki et al

Claims 35-40 stand rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over the disclosure of Karl (as applied against claims 1-3, 5-7, 9, 15 and 32) in view of Suzuki et al (US6153001). The Applicants respectfully traverse this rejection.

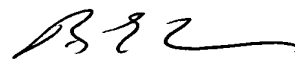
Without going to the basis of the rejection, the Applicants would note that claims 35-36 are dependent on claim 32, claims 37-38 are dependent on claim 33, and claims 39-40 are dependent on claim 34. Claims 33 and 34 were not rejected on the basis of Karl; therefore, the Applicants request withdrawal of this rejection as applied to claims 37-40. Further, as discussed above, claim 32 now contains the limitations of claims 14, which is not part of the rejection based solely on Karl. Since Karl is no longer applicable against claim 32, the Applicants respectfully request withdrawal of this rejection as applied to claims 35-36.

Conclusion

In view of the amendments and arguments presented above, the Applicants submit that claims 1-42 are patentable over the art of record, and that this case is otherwise in condition for allowance.

Should the Examiner wish to discuss any issues involved in this application, the Examiner is respectfully invited to contact the undersigned at the telephone exchange set forth below.

Respectfully submitted,


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